

## THE SOCIAL IMPACTS OF SCIENCE

## THE INFLUENCE OF MODERN BIOLOGY

MODERN Biology may be said to date from the publication of Darwin's great work which resulted in a general acceptance of the belief in Organic Evolution, for not only has the bulk of thought and work in the biological field since then been at the very least strongly influenced by the ideas which were then let loose to develop and breed in every sphere of human activity, but the theory itself has been the actual stimulus behind an unparalleled outburst of biological investigations.

It is therefore of the utmost importance that we are clear at the outset on two fundamental points: (1) that Charles Darwin was by no means the first to propound a theory of Organic Evolution, the success of his effort being due to (a) the mass of argument which he produced in support of his particular theory of Evolution, and (b) the time at which he made known his views—a time which happened to be favourable for their acceptance; and (2) the actual title of the book which produced such momentous results. It was *The Origin of Species by means of Natural Selection, or The Survival of the Fittest*, and it was the suitability of the second title in particular which helped to make the theory so acceptable to the Liberal school of thought which was developing with the rise of industry and of wealthy industrialists concomitantly with the degradation of their employees to a status of virtual slavery. The theory was fortunate also in gaining as its fairy-godfather, T. H. Huxley, who not only made the idea of evolution acceptable to a vast number of readers and listeners, but who also introduced it into the fields of ethics and religion. In Germany, too, it found ardent supporters. By the time they, Ernst Haeckel in particular, had done with it, however, it was no longer the theory propounded by Darwin but a frankly materialistic form of anti-God propaganda, much of which has unfortunately spread over the world under the misnomer of 'Darwinism.'

This atheistic monism of Haeckel's fitting in with the philosophy aggrandizing the German Emperor was a major factor which led to the war of 1914-18 and together with more recent parodies on scientific and philosophic reasoning must be held to be one of the most potent forces which have resulted in the present world upheaval. (It is of special interest at the moment to recall that the first Japanese edition of half-a-million copies of Haeckel's book was

published and distributed very soon after the original publication in German.)

Since the publication of the *Origin of Species*, biology has developed tremendously both in theory and in fact, and its findings both theoretical and actual have been applied to practically every phase of human activity. Improvements in microscopes, micro-technique and micro-bio-chemistry have enabled us not merely to understand a great deal about the minute structure of organisms, but even to discover with virtual certainty the actual physical and chemical entities within the cell nuclei which are handed down from one generation to another to give rise under appropriate conditions to the characteristics of the particular kind of organism under consideration.

The mechanism here involved has been shown to be adequate to meet the requirements of the Laws of Heredity postulated by the Abbé Gregoire Mendel (postulates which might have resulted in radical alterations to his theory had Darwin been conversant with them). More than this. It enables us so to amplify Mendel's postulates without altering their fundamental nature that large numbers of cases which at first seem to be incompatible with his findings actually support them.

It also enables us to understand how differences of certain kinds between parents and offspring arise both naturally and under experimental conditions. Chromosomes and their constituent genes, unknown half a century ago, are already everyday playthings of the cyto-micro-bio-chemist.

Comparative embryology and the chemistry of the so-called ductless glands or endocrine organs combined with laboratory experiments, clinical observations and therapeutic treatment, have made us realise the tremendous rôle that these structures, among which are included the reproductive organs, play not merely in our physical but also in our emotional and psychical lives. Unless they function normally we are, according to which gland is affected and in which direction it is affected, sub- or super-normal, and not merely physically but mentally. Already cures undreamed of a few years ago are of daily occurrence by means of operations, application of gland substance, of gland extract, or even in some cases of a simple or a synthetically produced substance. Goitre is no longer a disease but a crime, and diabetes and other functional diseases should soon belong to the same category.

Experimental embryology and tissue-culture—the growing of living tissue remote from a living body and in artificial media—have also yielded results which no one could have foretold a few years

ago. Transplant experiments, for instance, have resulted in the production of embryos having a nervous system above and a second one below the alimentary canal.

In short we have learnt so to bend living matter to our pleasure that materialists find in all these fields more and more arguments against any vitalistic and teleological explanation of living organisms and still more against any need for a Personal God such as we and all others who believe in any kind of a Revelation recognise.

Arguments along these lines reduce Man to merely a super-beast and deprive even his body of the sacred respect to which it is entitled, so supporting those who uphold euthanasia, sterilisation of the unfit, birth control as against self-control, purposive direction of human reproduction, and the like, and logically those who advocate such measures should be materialists.

In Darwin's day science was all but unknown in any of our educational establishments. Since then it has not only invaded practically all of them, but has even been the cause which has called many of them into being, while biology in some form or other has invaded every field of education—medicine, science, social welfare, philosophy, ethics, religion. It comes even into the boudoir and beauty parlour, for turtle oil is one of the most useful of modern Eve's weapons.

This invasion has been hastened by all kinds of well-meaning bodies who rightly realise the value of biology both as a subject of general education and as an easy and natural introduction to personal hygiene and the outlines of reproduction. During the last few years and especially since the outbreak of war more and more has been done to emphasise the need of teaching personal and sex hygiene to those about to leave school, to adolescents and to those in camps. In many cases we fear the just anxiety has resulted in over-hurried and telescoped instruction whose fruit cannot all be good.

Under what conditions and auspices are British biologists trained? With the exception of the very few who are trained in our own and some other denominational colleges, all are reared under the basically materialistic influences to which I have referred, while many Catholic and other teachers of school biology have not had any formal training in zoology, but are at best chemists, physicists and botanists who have been pitch-forked into the teaching of animal biology.

What hope is there for a proper understanding of Social Biology and for an improvement in the general standard of ethics and morals under these conditions?

Biology has impacts of quite other kinds, impacts which on ac-

count of their very nature and results are much more likely not to be realised.

The rise of industry has brought people from the country into the towns, has urbanised many rural districts and has brought into being numerous new towns. In short, it has changed Britain from a country of farmers and craftsmen into one of shopkeepers and tenders of machines.

Improvements in transport and changes in methods of handling food materials have made the housewife rely more and more on imported tinned products, chemical so-called advance is daily adding synthetically manufactured substances both to the kitchen and other parts of the home front. The housewife has as a result forgotten all about her grandmother's herb garden and the vast stores of native plants and animals which were esteemed by our forefathers, and which should still, especially during the present emergency, be used in our kitchens and dining rooms.

Our knowledge of the laws of heredity has enabled us to produce improved types of flowers, cereals, fruits, poultry and other stock, and combined with developments in chemistry and agricultural engineering has in many ways revolutionised agricultural practice.

In short, at first sight there appears to be no field which has not been vastly affected by the impact of biology. But little thought is needed, however, to convince us that there is one extremely important field upon which biology has, up to the present, had but very little effect—that of Catholic awareness and realisation.

In order to emphasise two main points from what I have said, I now refer to four matters, the first two bearing on the importance of biology in connection with Social Science, the other two pointing to the general lack of Catholic awareness of the importance of modern science, of biology in particular, to each and every one of us.

The general interest in Human or, more correctly Social, Biology has increased very considerably just recently, so much so in fact that in response to a definite demand the British Social Hygiene Council is holding a Summer School of Social Biology from August 5th to 19th at Cambridge, while the second interesting development has occurred in the University College in which I have the honour to work. A first-year course in Psychology and Sociology has been provided. It is obligatory for Pre-Medical Students and optional for those in Arts and Science.

The Course has now been in operation for some years and has proved a great success: the students find it one of the most interesting and useful of their subjects. In the Psychology a general introduction to the philosophy of mind is given by way of antidote to pre-

sent popular errors; in particular, intellect and free-will are explained and defended.

This year an innovation has been introduced. Not only is the soul-and-body problem treated, but Man is related to his biological and physical environment. This means consideration of biological law, evolution and 'Man's place in Nature.' In this portion of the course the students, although they have done no Zoology, attended illustrated lectures on biology.

After having related Man to the animal world and shown his unique status, the problems of Sociology are taken up; and it is emphasised that social conclusions depend largely on one's philosophy concerning God and the Soul. Natural Law, Family, State, Private Property, Totalitarianism, etc., are treated; and four Papal Encyclicals are read as text-books.

Evidence of the depth of the Catholic unawareness to which I have referred was furnished in a most unexpected manner just before I left London for this Conference. During a telephone conversation with an outstanding example of Catholic Action, I expressed the hope that we should meet here. 'No. I cannot get to the Conference, and anyhow *I'm not particularly interested in Science,*' was the reply. Further evidence of a very widespread kind is afforded by the general lack of interest in the work of the Guild of Mendel and Pasteur and the apparently impossible task of making people understand that, while it is hoped that all Catholic biologists will become full members of the Guild, the Guild is not one of Catholic Biologists. It was formed some years ago in order to try to make ALL Catholics realise something of the Social Impacts of Science, of Biology in particular, and to enable them to combat erroneous ideas and harmful though well-meaning propaganda and action by means of sound argument based on scientific and philosophic rather than on merely religious convictions. With the assistance of Federation, and of the Editor in particular, 'Gomp' Supplements appear from time to time in *Unitas*. These contain articles which are made as topical as possible, reviews of new books which aim at showing the weak as well as the good points of the books considered, answers to correspondents, etc. Without greatly increased support, however, it will be impossible to continue this all-important work. The total number of Catholic biologists is so small that it is doubtful whether it would be possible to continue a regular publication, however unpretentious, even were all of them full members.

Instead of taking up biology as a profession the vast majority of Catholics with any leaning towards the biological field take up medicine and thereafter scorn biology as though it were a poor relation

rather than a twin sister. During my twenty years in a University College whose students are preponderantly Catholic, some thirty women and five men students, four of the latter non-Catholics, have taken my courses in Zoology as degree subjects, against some fifteen hundred who have taken Zoology as part of their first medical examination.

What are we going to do about it? Are we, especially those of us who are members of Federation, of teaching bodies of any kind, or of both, going to interest ourselves in this vastly important matter, or are we going to perpetuate our attitude of laissez-faire and be content to allow the Social Impacts of Biology, so far as they affect Man as Man, to be completely dominated by influences which are not merely non-Catholic, but for the greater part actively anti-Catholic and anti-Christian?

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*Professor Renouf wrote this paper to be a sketch to introduce the subsequent discussion. Previous to publication he intended to add certain points he made during the discussion, particularly those regarding education and biology. These are very relevant to his contribution, and it is with regret that, owing to postal difficulties, we have not received the additional matter in time for press.—EDITOR.*